

A process for the preparation of organomagnesium compounds from organic halides and magnesium metal in the presence of transition metal catalysts using an activity-enhancing main group metal component. The latter is a compound of a metal of Periodic Table groups 1, 2 or 13 in which elements of Periodic Table groups 14-17 or hydrogen are bonded to the metal. Some of these additional components may also be formed in situ.